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Forward to Tim Bennett

Received + look

SAVE

ARMY SERVICE FORCES
UNITED STATES ENGINEER OFFICE
MANHATTAN DISTRICT
OAK RIDGE, TENNESSEE

EIDMB-1

TJE:fd

21 March 1945

RECEIVED MAR 29 1945 K-25 OPERATIONS

Fercleve Corporation,
Clinton Engineer Works,
Oak Ridge, Tennessee.

Attention: Mr. C. W. Roberts.

Gentlemen:

Today the S-50 Plant was in serious danger of being shut down on account of lack of condensate, which is due directly to condensate losses in our plant and the power house. This matter has become so serious that in accordance with your request to Major Evans, preparations are being made to resume hauling distilled water from Y-12.

Lt. Col. Cook reports that power house personnel has stated to him that there are no leaks in evidence in the power house, and that they cannot account for this large loss of water. Inasmuch as evaporator makeup is approximately 50,000 to 60,000 pounds per hour, it is obvious that this water is being wasted in some manner. You are therefore directed to start immediately at one end of the S-50 Plant with a routine and set plan to stop every leak, both high and low pressure in evidence throughout the plant. The conductivity meter for the low pressure condensate should be on hand and should be installed immediately and the condensate lines, which are now wasted on the floor, should also be recovered. Investigation should be made of the condensate from the various building heating systems to determine that it is all being returned in a satisfactory manner.

Please advise me by letter your program for making these repairs and when you expect to have all leaks in the S-50 plant and in any of the auxiliary building heating systems stopped to the point where condensate losses are not too excessive.

For the District Engineer:

Very truly yours,

M. C. FOX,
Lt. Col., Corps of Engineers,
Unit Chief, Area S-50.

cc: Lt. Col. R. W. Cook

600.18 (K-50 Power Plant)

ARMY SERVICE FORCES
UNITED STATES ENGINEER OFFICE
MANHATTAN DISTRICT
OAK RIDGE, TENNESSEE

Post Office Box P
OAK RIDGE, TENN.

EIDMB-1

10 January 1945. TJE/emh

Ferguson Corporation,
Clinton Engineer Works,
Oak Ridge, Tennessee.

Attention: Mr. C. W. Roberts.

Dear Sir:

I note that the Ferguson Corporation has been blowing down steam line SP-1 for a continuous period of about five (5) hours, today. On checking with your Maintenance organization, I find that it is very likely that this operation will continue for at least another two (2) hours. I fail to understand why the line was not shut down entirely in view of the fact that the contemplated repairs were scheduled to take such a long period of time. It is apparent that very little regard is being given to my instructions of numerous other occasions that every effort be made to save and return all condensate to the Power House, and if such practice continues, it is evident that the steam supply to S-50 will have to be curtailed due to the loss of condensate.

It is requested that you give this matter your immediate attention and inform your operating personnel by letter, with a copy to this office, of any such instructions as you may see fit to insure that such a practice does not re-occur and that every effort is made to save and return condensate to the Power House.

For the District Engineer:

Very truly yours,

M. C. FOX,
Lt. Col., Corps of Engineers
Unit Chief, Area S-50.

CC: Col. Cook
Mr. W.H.Mitchell

THIS FORM FOR INTER-COMPANY CORR[illegible] ONLY

MEMORANDUM OF CONFERENCE HELD NOVEMBER 20, 1944

FOR DISCUSSION OF ADDITIONAL FACILITIES AT K-25 TO MAKE STATION INDEPENDENTLY OPERABLE FROM S-50.

Present:

Lt. Col. R. W. Cook) Army
Major T. J. Evans)
Capt. Beardon)
Dr. Felbeck)
Mr. Center)
Mr. Manz)
Mr. Mendelbaum)
Mr. Deeds)
Mr. Bolinger)

Mr. H. C. Schroeder) Sargent & Lundy
Mr. Pearson)
Mr. Smith) Kellex

This meeting was called to ascertain and review additional facilities required to make the K-25 power plant operation independent from S-50. The opening portion of the conference was devoted to a discussion relating to certain electrical features involving generator operation. It was pointed out that in order to recover condensate returns from S-50, it is necessary to operate four or sometimes five generators, due to necessity of using that much condenser capacity to handle returns. Under the present operating conditions, it is not possible to operate this many generators on the busses without exceeding allowable connected capacity as governed by the short circuit rating of the 13.8 KV switching equipment. A brief description of the electrical arrangement was given outlining the fact that a temporary tie was provided in order that testing and preliminary operation of variable frequency units could be completed prior to time when an appreciable load could be handled in the Process Area.

As S-50 plant went into operation, it became necessary, due to their requirements, to place into service generators over and above the amount which can be connected to busses within the short circuit limitations; and since these limitations are a definite function of the plant design, it is not within the province of the field engineering force to agree to, or authorize the operation of generating equipment above the limitations imposed by the short circuit rating of the switch gear.

Possibilities of procuring reactors to provide proper protection equipment was discussed with the consensus of opinion being that normal operation of generating equipment would be attained before new equipment could be procured.

This closed the discussion of electrical features, except that a further review of generator operations would be requested from Mr. F. D. Troxel, Kellex Corporation.

It was pointed out that when heat exchanger equipment was placed in operation it would be possible to reduce the number of generators required to be in service. On a previous visit, Mr. Skog stated that heat exchanger operation should be held in abeyance. Mr. Schroeder advised that Mr. Skog has now withdrawn this statement and felt that equipment can now be operated. A new relief line on Boiler Feed suction header is being installed and will be available for hand operation by December 11.

At present only two of the three evaporators in the power house are available. The third evaporator cannot be used until such time as Units 1 or 2 are available, or the installation of a piping tie-in from the Boiler Feed turbine exhaust to the present Low Pressure heating system. It is hoped that S-50 can be supplied sufficient Low Pressure steam from other sources for the short period necessary to make this piping connection, which may be within two or three days.

On the basis of a previous figure verified by Lt. Col. Fox and Mr. Pressy, Fercleve Corporation, S-50 requires 5% make-up or 80,000 #/Hr. to take care of operational losses. Carbide & Carbon recommend that additional evaporator capacity of 160,000 #/Hr. minimum or preferably 200,000 #/Hr. be provided, this water to be evaporated using steam from a source other than the present H.P. steam header, which would mean either an externally fired boiler or flashing the present S-50 return system.

Carbide & Carbon also request an elevated water storage tank having 300,000 gallon capacity with gravity flow either connecting to present storage tanks or a tie-in with a new condenser noted below.

A new condenser is desired by Carbide & Carbon to condense S-50 condensate return now discharging to condensing turbogenerator units in power plant, in other words, remove present returns from turbine units and feed to present boiler feed suction by means of additional pumping equipment and, if necessary, using pressure regulators.

In conclusion, Dr. Felbeck summed up as follows:

1. Power plant and S-50 to be independent, in order to protect power plant equipment in best possible manner.

2. Be able to give S-50 full load steam and not be dependent on condensing units -- flash all returns to new condenser.

...ble to furnish maximum steam flow to S-50 without any condensate ...urn to power plant for a period of one hour.

...ovide 160,000 #/Hr. additional evaporator capacity.

...ovide a 300,000 gal. elevated storage tank.

...place present flash tanks with a separate flash tank, condenser, ...cooling and pumping equipment to feed water directly to boiler feed ...mp suction.